Spot-Oiling JOHNSONGRASS

TEXAS AGRICULTURAL EXTENSION SERVICE
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SPOT-OILING JOHNSONGRASS

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JOHNSONGRASS CAN BE killed to the ground by the application of 1/3 teaspoonful of a herbicidal oil to the crown of each stem. Eradication of established Johnsongrass can be obtained in a single season by repeating the treatment at 7 to 10-day intervals. Best results are obtained when treatments are begun before the stems are 6 inches tall and before the base of the stems become glazed. The oil is used most efficiently when it is applied to the lower 1/4 inch of the stem. Treatment of the foliage is unnecessary and wasteful. Six or more consecutive oil treatments usually are needed to eradicate the grass.

This practice is successful in controlling scattered infestations of established Johnsongrass in cotton and most other crops. It is faster, easier and far more effective than hoeing. Avoid treating the stems and foliage of crop plants. They are susceptible to the oil at the rates used. A careful operator can treat the crowns of the grass as close as 2 inches to cotton stems without injury to the crop. A slightly greater distance should be allowed for corn. The amount of oil needed depends on the stand of the grass and the efficiency of the operator. Five to 10 gallons of oil per acre per application commonly are used where the infestation is not excessive.

The stand of cotton in heavily infested Johnsongrass spots usually is seriously reduced by hand hoeing.

The dead Johnsongrass in the foreground was killed by hand application of oil at the ground line. Suitable oils kill the grass to the ground within a few hours. The 2 green shoots were missed by the oil.

Treatment should begin as early in the season as practical. The use of the oil should be restricted to treating established Johnsongrass in the crop row unless previous cultivations have not eradicated the grass in the middles. Treat all live Johnsongrass each time a field is oiled and do not hoe the crowns that have been oiled.

Results

Crown-oiling was used at College Station in 1952 to eradicate scattered stands of established Johnsongrass in cotton growing on 5

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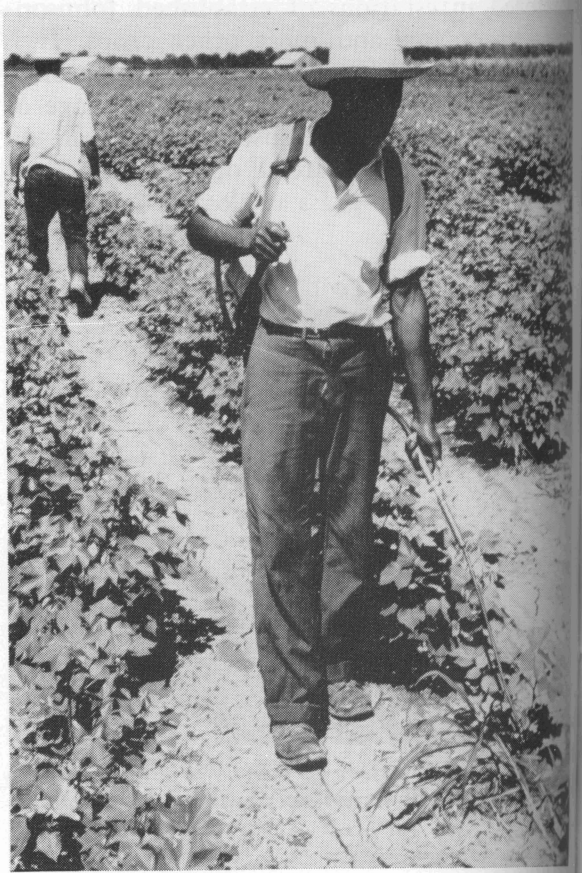
A knapsack sprayer such as the one shown is suitable for use in spot-oiling scattered stands of Johnsongrass in row crops. The use of hand sprayers allows each operator to move along infested rows at a variable speed.

acres of Norwood silty clay loam soil, and in 1952 or 1953 on 21 acres of Norwood silty clay loam, and on 3 acres of Miller clay soil. In 1954 this practice was extended to 600 acres of cotton, 20 acres of corn and 5 acres of sorghum at College Station and to 1,500 acres of cotton at McGregor.

The average stand of second-growth Johnsongrass at College Station in 1954 was reduced 74 percent in 4 tests by 2 crown-oilings with naphtha, 83 percent in 7 tests by 3 oilings, 95 percent in 6 tests by 4 oilings and 98 percent in 4 tests by 5 to 7 oilings. The use of mixtures of 50 percent naphtha and 50 percent kerosene or diesel fuel oil reduced the stand of the grass 95 percent following 4 applications in each of 4 tests. Ten thousand gallons of this mixture were used at College Station for crown-oiling scattered second growth Johnsongrass in 491 acres of cotton in 1954. Cotton stand losses due to misapplication of the oil was less than 1 percent.

The average cost of treating the grass with the naphtha-diesel fuel oil mixture was $2.35 per acre of infested cotton per application. The oil cost $1.05 and labor to apply it cost $1.30 per acre. Six applications cost $14.10 per acre, eradicated 96 percent of the spots and reduced the stand of second-growth Johnsongrass 99 percent. Cutting Johnsongrass to the ground 4 and 5 times in adjacent fields with comparable infestations cost $5 to $7 per acre, did not reduce its stand and did not prevent prolific production of seed after hoeing was discontinued.

Cotton farmers in various parts of Texas have reported favorable results with spot-oiling during the past two years. One grower spot-oiled Johnsongrass in 330 acres of cotton 5 times in 1954 at a cost of only $4.40 per acre for labor and materials.



The oil is applied to the crown for the most efficient killing of Johnsongrass in the row and to avoid oiling crop plants.

Gravity-flow sprayers are suitable for crown-oiling Johnsongrass. They are the cheapest equipment to use when large crews are employed to spot-oil in row crops. This one was made from a 1-gallon jug.

This type of special-built, galvanized light metal can is the most satisfactory and durable tank for a gravity-flow sprayer. Other types of containers soon leak or rust.

Oils

Many naphtha oils and oil mixtures are satisfactory for the crown treatment of established Johnsongrass. Suitable naphthas usually are available from bulk stations. Diesel fuel oil and kerosene kill tender second-growth Johnsongrass when temperatures are high. However, they are slow in killing the grass during low temperatures and when the grass nears the boot stage. Oil-soluble dinitro and other proved fortifiers can be added to diesel fuel oil or kerosene according to the manufacturers' directions to increase the contract effectiveness of these oils. Diesel fuel oil or kerosene fortified with 1 percent pentachlorophenol by volume is usually as effective in killing Johnsongrass as the naphtha-type oils used alone. A mixture of half-diesel fuel oil or kerosene and half-naphtha also is satisfactory.

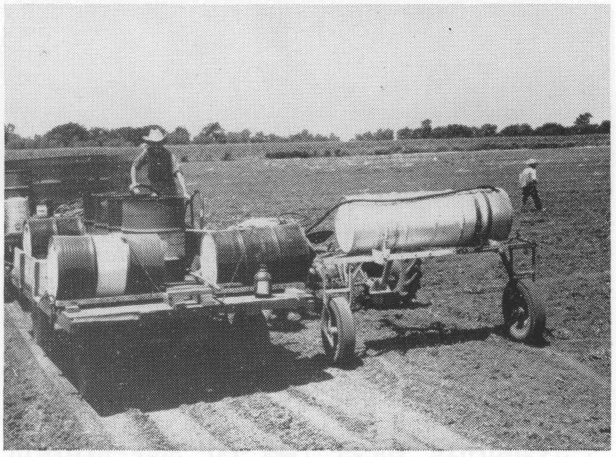
Cost of Material

Naphthas, diesel fuel oil and kerosene generally are available in Texas in barrel and 500-gallon lots. Naphthas usually cost about 21 cents per gallon and diesel fuel oil and kerosene, about 13 cents. General weedkilling oils are available in transport truck lots (5,000 gallons) on special order. Pentachlorophenol, oil-soluble dinitro, and other proved oil fortifiers are available from dealers in agricultural chemicals or on special order. Diesel fuel oil or kerosene mixed with an equal volume of naphtha or fortified with 1 percent pentachlorophenol by volume usually cost about 17 cents per gallon. The prospects of M-233 Dalapon being sold in 1955 are unknown.

Equipment

Crown application by hand permits treatment of the grass without getting the oil on the crop plants. A liberal "squirt" of the oil

Crown-oiling of Johnsongrass should start early in the season, shortly after the cotton emerges. It sometimes can be done to advantage on prepared beds before cotton is planted.



Large crews require a convenient field supply of oil for frequent refilling of hand sprayers. A field tank is being loaded from a supply trailer.

A gravity-flow hand sprayer is being filled from a field tank. The field tank is operated along the crop rows to service individual operators of hand sprayers as needed.

to the crown of each grass stem is enough to apply at one time. Several satisfactory methods of applying the oil were used at College Station and McGregor. The operator may: (1) walk and carry a knapsack, hand-powered sprayer or a gravity-flow sprayer on his back, (2) walk and carry a hand sprayboom connected by a hose to a tractor-mounted sprayer, or (3) ride on a platform mounted on the front of a tractor at the time the crop is being cultivated and spot-spray the Johnsongrass with the use of a spray line. The operator who rides usually can not spray the crowns as thoroughly as the operator who walks.

Two types of hand sprayers are satisfactory for the crown treatment of Johnsongrass. They are: (1) knapsack sprayers equipped with piston-type hand pumps and (2) gravity-flow sprayers. Knapsack sprayers cost $25 to $30 each. A suitable gravity-flow sprayer for use off the operator's back can be constructed for less than $10.

Knapsack sprayers commonly have a tank capacity of 3 gallons. Most operators prefer to carry only 2 gallons of oil. Adding oil at intervals from a convenient supply in the field is less fatiguing and more efficient than for an operator to fill his spray tank. The hand pump of a knapsack sprayer is capable of developing 60 pounds of pressure per square inch and more. However, a pressure of 12 pounds is more desirable for making crown applications than a higher pressure and is easier to maintain. A fan-type Teejet 8002 nozzle tip and a 50-mesh check valve screen, or their equivalent, are needed on the sprayboom when a knapsack sprayer is used to crown-oil Johnsongrass. The cutoff valve, hose and the length of the sprayboom used on a knapsack sprayer should be the same as for a gravity-flow sprayer.

A gravity-flow sprayer consists of: (1) a supply tank, (2) hose line with a quick-acting spring tension shut-off valve and (3) a hand sprayboom equipped with a flooding nozzle. A 2-gallon tank for a gravity-flow sprayer is adequate where a convenient supply of oil is kept in the field from which to refill the operator's tank. The most satisfactory tanks used were those built by a tinsmith. All gaskets and hose must be oil resistant. Hose

with inside diameters of 1/4 to 5/16 inch are satisfactory for use on hand sprayers. A 1/4-inch spring tension spraying system cut-off valve or its equivalent is recommended. A 30-inch hand sprayboom is most convenient for use by operators of average height. Galvanized 1/8-inch pipe is recommended as a sprayboom. A spraying system 1/8 K5 flooding nozzle or its equivalent, without a screen, is most satisfactory for use with a gravity-flow sprayer.

Tractor-mounted sprayers also were used to spot-treat Johnsongrass in cotton in 1954. Power-driven sprayers normally used for insect control in row crops were modified for this purpose. A spray pressure of 12 pounds per square inch was used. Two systems of treating the grass were tried. In one system the crew applying the oil walked; in the other, they rode.

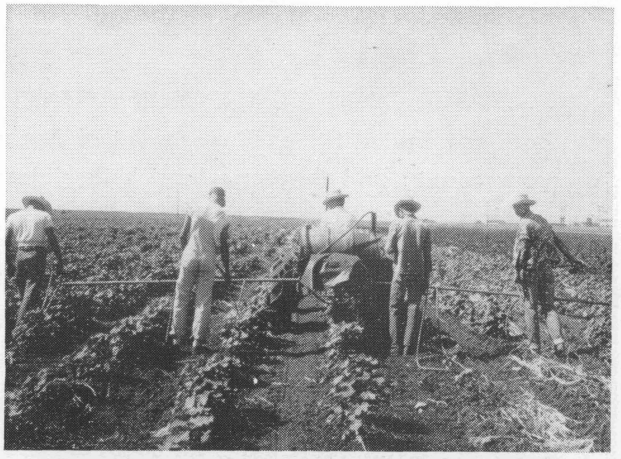
In the first case, the crew consisted of a tractor driver and 4 sprayboom operators. Four spray lines, each 12 feet long, were attached to a distribution pipe and the 4 spray operators spot-sprayed the Johnsongrass as they walked behind the tractor. The driver adjusted the speed of the tractor to the needs of the spray operators. Normally each operator sprayed the grass in 2 rows, but as the occasion required he also helped his neighbor.

In the other case, a normal crew was composed of a tractor driver and 2 sprayboom operators. The spray operators rode on a platform on the front of a 4-row tractor equipped for cultivating the crop and spraying the grass at the same time. Each spray operator treated the Johnsongrass in 2 rows in fields where the spots were small and sparse. In fields where Johnsongrass spots were numerous 2 extra spray operators were added to the crew and each treated the grass in 1 row. The speed of the tractor used was slower than that normally used for cultivation alone.

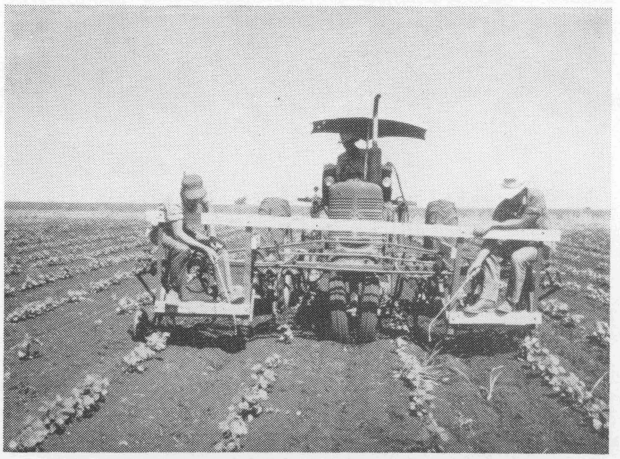
Cautions

Oils used in spot-treating Johnsongrass are flammable and smokers should abstain while using or handling them. These oils should be handled carefully as they will "burn" tender skin on unexposed portions of the body.

A Johnsongrass oiling crew and the field supply tank are shown. The operator at upper left is going in the opposite direction from other members of the crew.



Crown-oiling of Johnsongrass in row crops can be done with spray lines from a tractor-mounted sprayer. However, oil and labor are used just as efficiently with gravity-flow hand sprayers.



The most efficient use of labor in oiling scattered stands of Johnsongrass in cotton is obtained by transporting operators of hand-spray guns on a tractor cultivator equipped with a power sprayer.

Usually they evaporate too rapidly to affect exposed skin. They can cause painful burning of the eyes. Extreme care should be taken to avoid getting the oil in the eyes or on unexposed skin. Immediately remove clothing that is wet with the oil. Wash the affected skin and apply vaseline. Rinsing the eyes thoroughly with clean running water under low pressure usually gives relief from burning. Never rub an affected eye. Consult a doctor if eye irritation persists longer than a few minutes.

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